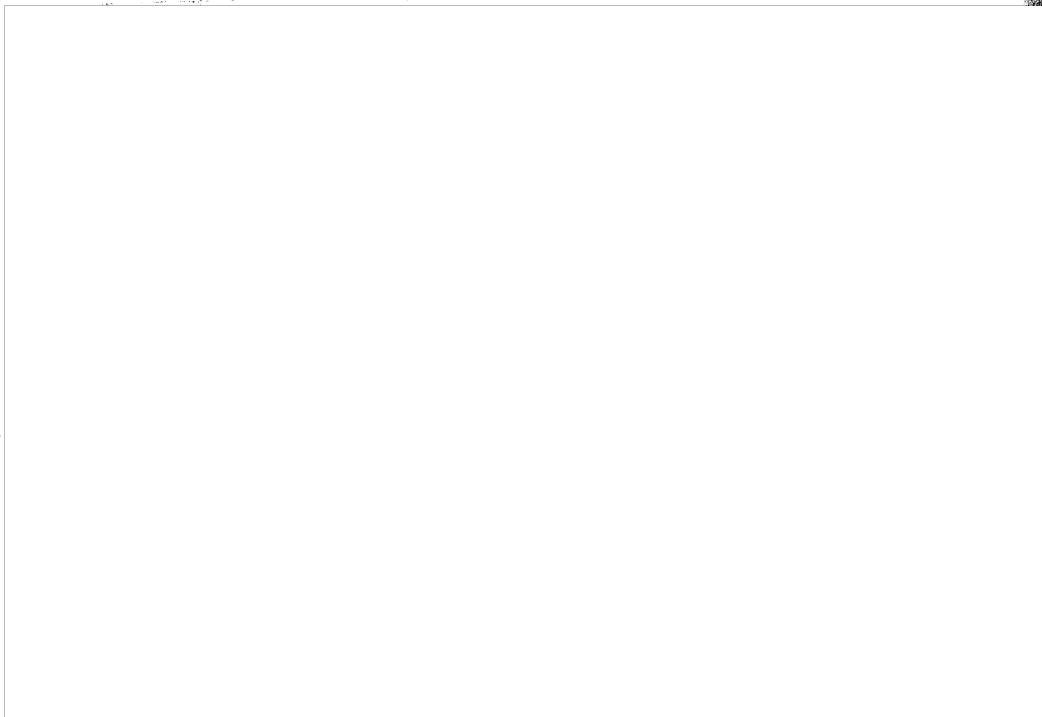


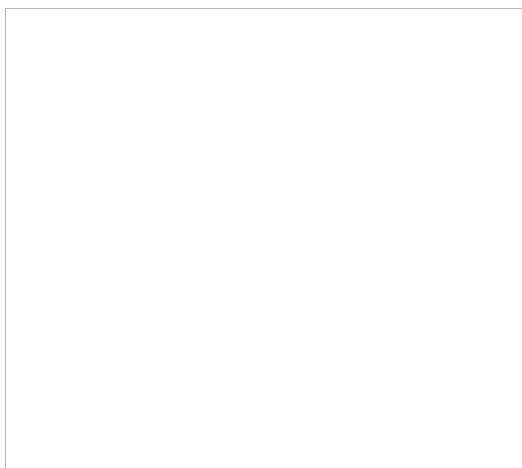
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The Soviet Arctic Ocean

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The Soviet Arctic extends from the western border of the USSR adjoining Finland to Bering Strait. The Arctic Ocean is from 2,000 - 3,000 meters deep; up to now five areas more than 4,000 meters in depth have been established. The deepest area lies 5,440 meters north of the Chukotskiy Peninsula in northeastern Siberia.

The Arctic Ocean has a smooth, largely continuous cover of ice throughout the year, and this cover has proved suitable for transportation. Water from the Atlantic Ocean enters the Arctic Ocean through the opening between Greenland and Spitsbergen, whereas it is connected with the Pacific Ocean by Bering Strait, which is 90 kilometers wide and 50 meters deep.

With few exceptions, the water temperatures of the Arctic Ocean vary between plus 3.0 degrees and minus 1.95 degrees Centigrade in the lower strata of the troposphere, and between zero and minus 1 degree Centigrade in the entire stratosphere. Only in the intermediate layer from 100 to 800 meters, where the warm water of the Gulf Stream pours from the Atlantic Ocean into the Arctic Ocean, does the temperature rise somewhat and varies between zero and plus 1 degree Centigrade. On the whole the Arctic Ocean is warmer than its epicontinental seas; except at the surface, its salt content is comparatively high - 30 to 35.2 per thousand. The 200-meter depth line is considered to be the edge of the continental shelf, on which the island groups of Franz Josef Land, Severnaya Zemlya (Nicholas II Land), the New Siberian Islands, and some larger individual islands rest.

The Barents Sea is bounded on the northwest by Spitsbergen, on the northeast by Franz Josef Land, on the east by Novaya Zemlya, and on the south by the northern coast of the European continent. Its bottom slopes from east to west, so that the sea is deepest (533 meters) between Spitsbergen reef (south of Spitsbergen) and Europe's North Cape while eastward

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at 31 degrees East longitude it is not even 400 meters deep. Due to the strong flow of the North Cape branch of the Gulf Stream, the Barents Sea, except for its surface water and the lower stratum of its eastern part, evidences temperatures over zero as well as a high salt content (up to 35.1 per thousand). Therefore, the southwestern half of the Barents Sea remains generally ice-free even in mid-winter, and provides for profitable fishing and favorable navigation. In the eastern part of the Barents Sea, the lowest deep-sea temperatures known to oceanography minus 1.9 to minus 2.0 degrees Centigrade have been measured. The tides are pronounced. In Murmansk, the flood tide reaches 3-4 meters; in Cheshskaya Bay, east of Kanin Peninsula, even 5-6 meters.

The White Sea, which is very lobate, separates Kola Peninsula; Kandalaksha, Onega, and Dvina bays penetrate deep into the land. As a branch of the Barents Sea, it has access to the ocean through Gorlo Sound. Mezen'skaya Bay, west of the base of Kanin Peninsula, could be better considered an independent bay of the Barents Sea like the Cheshskaya Bay east of this peninsula. The principal axis of the White Sea, 500 kilometers long, runs from Kandalaksha to Arkhangel'sk. Mid-sea depths reach over 200 meters and, in Kandalaksha Bay, mostly over 300 meters but not more than 310 meters. Onega Bay is generally less than 40 meters deep. At its mouth are the Solovetskiye Islands, which have become famous because of their concentration camps. The most important rivers emptying into the White Sea are the Dvina, the Mezen', and the Onega, each of which enter bays of the same name. As a result of the fresh-water inflow, the salt content is comparatively low: 22-30.34 per thousand. The tides are pronounced: the floodtide reaches 5-6 meters west of Mezen'skaya Bay; up to 8 meters at the mouth of the Mezen'; and 1-2 meters in the main basin. Water temperature reaches 13 degrees Centigrade in the middle of summer (July-August) at the surface, and even 18 degrees Centigrade along the coast. From 25 meters below the

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surface to the bottom, water temperatures range from below zero to minus 1.5 degrees Centigrade. Frequent storms in winter and spring prevent the formation of a continuous ice cover in the main basin and in Gorlo Sound. During the last 20 years, which have been relatively warm, the middle of the sea has often been partly or wholly ice-free. The bays, on the other hand, are covered with a continuous ice cover.

At Arkhangel'sk, Dvina Bay closes at the beginning of November, and reopens in the first half of May. In spite of a harsh climate and frequent fogs, fishing and navigation are significant largely because of the Baltic-White Sea Canal. The shape of the coast changes. The summer coast (Letnyy Bereg), up to 75 feet high, and the still higher winter coast (Simniy Bereg) are steep. On the northern coast (southern coast of Kola Peninsula) only the 50-kilometer long part of the coast northwest of Cape Turi is more rugged. East of the Turi Peninsula to Sosnevet's Island, the coast is rather low. At ebb-tide, a sandy beach over 100 meters wide in places appears.

According to Soviet literature, the Kara Sea comprises the entire epicontinental sea that is bounded in the west by the Vaigach-Novaya Zemlya island chain, and in the east by the Taymyr coast and the Severnaya Zemlya island group. Leonid Breitfuss, the well-known explorer, treats the West Siberian Sea (east of 70 degrees East) separately. According to him, the Kara Sea is bounded on the east by the line that extends southward from the northern end of Novaya Zemlya to Belyy Island. The Kara Sea is generally no deeper than 200 meters. Only along the eastern coast of Novaya Zemlya there is a deep bottom called the Novo-Zemelskaya Vpadina; there the sea is mostly more than 300 meters deep and reaches 560 meters deep (northeast of Matochkin Shar). The salt content of the surface water varies depending on location and time. On the northeastern coast of Novaya Zemlya, it reaches its peak at 3.4 percent. In the middle part, under the influence of the fresh water masses of the Ob' River, which circle counterclockwise in the Kara Sea, the salt content is only 1.0 - 1.5 percent and only 0.3 percent in the region of thawing

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ice masses. When large ice lumps join, ice masses up to 20 meters thick can arise and real icebergs are found on the eastern coast of Novaya Zemlya. The West Siberian Sea adjoins the Kara Sea in the east without any distinctive boundaries. It is very shallow. Northward the sea bottom sinks gradually to a depth of 100 meters, the Novaya Zemlya Vpadina also continues in an easterly direction, but a depth of 200-meters is reached only at the northern edge of the sea at a distance of at least 350 kilometers from the Taymyr Coast. The southern part of the sea, which is especially shallow (20-50 m deep) has innumerable islands, of which a group lying 77 degrees North, 96 degrees East was first discovered in 1935. The Yenisey River causes the shallow coastal strip to freeze firmly in the winter for a width of 70 - 100 kilometers.

The Nordensköld Sea, or Laptev Sea, is the epicontinental sea between the Severnaya Zemlya island group in the west and the New Siberian Islands in the east and receives water from the influence of the Khatanga, Anabar, Lena, and Yana rivers. In addition to the influx of fresh water, Atlantic water carries in from the north below the surface. The eastern shores of Severnaya Zemlya produce icebergs.

The East Siberian Sea, between the New Siberian Islands in the west and Wrangel Island in the east, extends eastward between 140 degrees and 180 degrees East and receives water from the Indigirka and Kolyma rivers. In the north, it is constantly covered with icefields, so that shipping must take place near the coast in narrow channels which have thawed. Definite traces of Atlantic and Pacific waters have been established near Bennet Island. The climate here is very inclement. During two-thirds of the short navigation period, there is fog.

Finally, the Chuckchee Sea extends along the Asiatic-American reef from Wrangel Island eastward to Point Barrow, Alaska. It is likewise very shallow and has currents converging from the north, south (Bering Strait), and west, which disturb shipping badly and also cause dangerous concentrations of ice. The water temperature is influenced by the Pacific;

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between Bering Strait and Herald Island, surface temperatures of plus 6 degrees to plus 8 degrees Centigrade were measured during the navigation period. At the bottom, the water temperature drops to minus 1.7 degrees Centigrade.

Bering Strait has a minimum width of 89 kilometers and a maximum depth of 52 meters; from October to June, it is frozen. In the center lie the Diomedes Islands. A cold current from the Chuckchee Sea passes through the Bering Strait southwards along the Siberian coast.

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